



State of Utah

SPENCER J. COX
Governor

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Lieutenant Governor

Department of
Environmental Quality

Tim Davis
Executive Director

DIVISION OF AIR QUALITY
Bryce C. Bird
Director

DAQE-AN101590009-25

November 13, 2025

Myron Bachman
North Davis Sewer District
4252 West 2200 South
Syracuse, UT 84075
mbachman@northdavissewer.gov

Dear Mr. Bachman:

Re: Approval Order: Modification to Approval Order DAQE-AN101590008-17 to Remove the 923-kW Generator Engine and Increase the Stack Testing Limit on the 1,517 hp Cogeneration Engines
Project Number: N101590009

The attached Approval Order (AO) is issued pursuant to the Notice of Intent (NOI) received on April 18, 2024. North Davis Sewer District must comply with the requirements of this AO, all applicable state requirements (R307), and Federal Standards.

The project engineer for this action is **Mr. Tim DeJulis**, who can be contacted at (385) 306-6523 or tdejulis@utah.gov. Future correspondence on this AO should include the engineer's name as well as the DAQE number shown on the upper right-hand corner of this letter. No public comments were received on this action.

Sincerely,

Bryce C. Bird
Director

BCB:TD:jg

cc: Davis County Health Department

STATE OF UTAH
Department of Environmental Quality
Division of Air Quality

APPROVAL ORDER
DAQE-AN101590009-25
Modification to Approval Order DAQE-AN101590008-17 to
Remove the 923-kW Generator Engine and Increase the Stack
Testing Limit on the 1,517 hp Cogeneration Engines

Prepared By
Mr. Tim DeJulis, Engineer
(385) 306-6523
tdejulis@utah.gov

Issued to
North Davis Sewer District - Wastewater Treatment Plant

Issued On
November 13, 2025

Issued By



Bryce C. Bird
Director
Division of Air Quality

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GENERAL INFORMATION

CONTACT/LOCATION INFORMATION

Owner Name

North Davis Sewer District

Source Name

North Davis Sewer District - Wastewater
Treatment Plant

Mailing Address

4252 West 2200 South
Syracuse, UT 84075

Physical Address

4252 West 2200 South
Syracuse, UT 84075

Source Contact

Name: Myron Bachman
Phone: (801) 728-6830
Email: mbachman@northdavissewer.gov

UTM Coordinates

406,750 m Easting
4,548,768 m Northing
Datum NAD83
UTM Zone 12

SIC code 4952 (Sewerage Systems)

SOURCE INFORMATION

General Description

North Davis Sewer District (NDSD) is a wastewater treatment plant located in Syracuse, Davis County. The wastewater treatment plant has 16 wastewater catchment basins and three water control impoundments. One Iron sponge absorber unit is employed to remove Sulfur from the developed biogas from the water treatment system. One Carbon absorber to remove volatile chemicals from processing. Two 1,100 kW generator engines running on digester gas or natural gas provide power to the facility. One emergency generator engine will offer power in case of an electrical emergency. One 3 MMBtu/hr boiler supplies hot water to the facility. One emergency flare device will control the exhausted biogas when it is necessary.

NSR Classification

Minor Modification at Minor Source

Source Classification

Located in Northern Wasatch Front O3 NAA, Salt Lake City UT PM_{2.5} NAA
Davis County
Airs Source Size: B

Applicable Federal Standards

NSPS (Part 60), A: General Provisions
NSPS (Part 60), IIII: Standards of Performance for Stationary Compression Ignition Internal
Combustion Engines
NSPS (Part 60), JJJJ: Standards of Performance for Stationary Spark Ignition Internal

Combustion Engines

MACT (Part 63), A: General Provisions

MACT (Part 63), ZZZZ: National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines

Project Description

NDSO has requested to modify AO DAQE-AN101590008-17, dated November 1, 2017, to make the following changes:

1. The 923 kW generator engine will be decommissioned.
2. The 1,517 hp cogeneration engines driving 1,100 kW generators will change the stack testing requirements for NO_x. The stack testing requirements were 0.5 g/hp-hr and 93 ppm for NO_x. Now, the stack testing requirements shall be 0.7 g/hp-hr and 160 ppm for NO_x. This is due to the engines burning digester gas instead of pipeline-quality natural gas. The manufacturer has confirmed these emission rates. There will be no change in the emissions for CO, so the stack testing requirements will continue to be 1.6 g/hp-hr and 440 ppm.

SUMMARY OF EMISSIONS

The emissions listed below are an estimate of the total potential emissions from the source. Some rounding of emissions is possible.

Criteria Pollutant	Change (TPY)	Total (TPY)
CO ₂ Equivalent	-4375	14875.00
Carbon Monoxide	-33.34	48.60
Nitrogen Oxides	-13	23.60
Particulate Matter - PM ₁₀	-0.35	1.10
Particulate Matter - PM _{2.5}	-0.48	0.10
Sulfur Dioxide	-0.28	0.50
Volatile Organic Compounds	-4.84	14.26

Hazardous Air Pollutant	Change (lbs/yr)	Total (lbs/yr)
1,1,2,2-Tetrachloroethane (CAS #79345)	-4	6
1,1,2-Trichloroethane (CAS #79005)	-3	5
1,3-Butadiene (CAS #106990)	-23	42
1,3-Dichloropropene (CAS #542756)	-2	4
2,2,4-Trimethylpentane (CAS #540841)	-17	44
2-Methylnaphthalene (CAS #91576)	-3	5
Acetaldehyde (CAS #75070)	-722	1318
Acrolein (CAS #107028)	-443	809
Benzene (Including Benzene From Gasoline) (CAS #71432)	-39	70
Biphenyl (CAS #92524)	-19	33
Carbon Tetrachloride (CAS #56235)	-3	6
Chlorobenzene (CAS #108907)	-2	5
Chloroform (CAS #67663)	-2	5

Ethyl Benzene (CAS #100414)	-4	6
Ethylene Dibromide (Dibromoethane) (CAS #106934)	-4	7
Formaldehyde (CAS #50000)	-4556	8324
Hexane (CAS #110543)	-113	207
Methanol (CAS #67561)	-215	393
Methylene Chloride (Dichloromethane) (CAS #75092)	-2	3
Naphthalene (CAS #91203)	-6	12
Phenol (CAS #108952)	-2	4
Polycyclic aromatic hydrocarbons (CAS #65996932)	-2	5
Propylene[1-Propene] (CAS #115071)	-2	3
Styrene (CAS #100425)	-2	4
Toluene (CAS #108883)	-35	65
Vinyl Chloride (CAS #75014)	-2	2
Xylenes (Isomers And Mixture) (CAS #1330207)	-16	29
	Change (TPY)	Total (TPY)
Total HAPs	-3.12	5.71

SECTION I: GENERAL PROVISIONS

I.1	All definitions, terms, abbreviations, and references used in this AO conform to those used in the UAC R307 and 40 CFR. Unless noted otherwise, references cited in these AO conditions refer to those rules. [R307-101]
I.2	The limits set forth in this AO shall not be exceeded without prior approval. [R307-401]
I.3	Modifications to the equipment or processes approved by this AO that could affect the emissions covered by this AO must be reviewed and approved. [R307-401-1]
I.4	All records referenced in this AO or in other applicable rules, which are required to be kept by the owner/operator, shall be made available to the Director or Director's representative upon request, and the records shall include the two-year period prior to the date of the request. Unless otherwise specified in this AO or in other applicable state and federal rules, records shall be kept for a minimum of two years. [R307-401-8]
I.5	At all times, including periods of startup, shutdown, and malfunction, owners and operators shall, to the extent practicable, maintain and operate any equipment approved under this AO, including associated air pollution control equipment, in a manner consistent with good air pollution control practice for minimizing emissions. Determination of whether acceptable operating and maintenance procedures are being used will be based on information available to the Director which may include, but is not limited to, monitoring results, opacity observations, review of operating and maintenance procedures, and inspection of the source. All maintenance performed on equipment authorized by this AO shall be recorded. [R307-401-4]
I.6	The owner/operator shall comply with UAC R307-107. General Requirements: Breakdowns. [R307-107]
I.7	The owner/operator shall comply with UAC R307-150 Series. Emission Inventories. [R307-150]

SECTION II: PERMITTED EQUIPMENT

II.A THE APPROVED EQUIPMENT

II.A.1	North Davis Sewer District Wastewater Treatment Plant
II.A.2	Boiler #2 Fuel: Digester gas, natural gas, or a combination of digester gas and natural gas Rating: 3 MMBtu/hr
II.A.3	Carbon Adsorber Number of units: One
II.A.4	Iron Sponge Adsorber Units Reduces the H ₂ S in the digester gas that is combusted in Cogeneration Engine #'s 1 and 2 and Boiler #2 Gas is treated in series with the units Number of units: One Reduces H ₂ S concentration to 58 ppm in the digester gas Initial digester gas treatment Number of units: One Reduces H ₂ S concentration to 25 ppm in the digester gas Final digester gas treatment
II.A.5	Cogeneration Engine #1 Lean burn Fuel: Digester gas, natural gas, or a combination of digester gas and natural gas 1,517 hp cogeneration engines driving 1,100 kW generators Manufacture date: 2014 NSPS Applicability: Subpart JJJJ MACT Applicability: Subpart ZZZZ
II.A.6	Cogeneration Engine #2 Lean burn Fuel: Digester gas, natural gas, or a combination of digester gas and natural gas 1,517 hp cogeneration engines driving 1,100 kW generators Manufacture date: 2014 NSPS Applicability: Subpart JJJJ MACT Applicability: Subpart ZZZZ
II.A.7	Emergency Generator Engine Fuel: Diesel Rating: 1,934 kW (2,593 hp) Manufacture date: 2004 NSPS Applicability: Subpart IIII MACT Applicability: Subpart ZZZZ
II.A.8	Emergency Flare Fuel: Digester gas Size: 6 inch

SECTION II: SPECIAL PROVISIONS

II.B REQUIREMENTS AND LIMITATIONS

II.B.1	Site-Wide Requirements									
II.B.1.a	<p>Visible emissions from the following emission points shall not exceed the following opacity values:</p> <ul style="list-style-type: none"> A. All boiler exhaust stacks - 10% B. All diesel-fueled emergency generator engine exhaust stacks - 20% C. Flare - 10% D. Cogeneration engines - 10% E. All other points - 20%. <p>[R307-201-3, R307-401-8]</p>									
II.B.1.a.1	Opacity observations of emissions from stationary sources shall be conducted according to 40 CFR 60, Appendix A, Method 9. [R307-201-3, R307-401-8]									
II.B.1.b	The emergency flare shall combust digester gas when combustion in other equipment is not possible or excess digester gas is produced. [R307-401-8]									
II.B.2	Cogeneration Engine Requirements									
II.B.2.a	<p>The owner/operator shall not emit more than the following rates and concentrations from the 1,517 hp (engine not de-rated for site altitude) generator engines</p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;"><u>Pollutant</u></th> <th style="text-align: center;"><u>ppm</u></th> <th style="text-align: center;"><u>g/bhp-hr</u></th> </tr> </thead> <tbody> <tr> <td>NO_x</td> <td style="text-align: center;">160</td> <td style="text-align: center;">0.7</td> </tr> <tr> <td>CO^x</td> <td style="text-align: center;">440</td> <td style="text-align: center;">1.6</td> </tr> </tbody> </table> <p>[R307-401-8]</p>	<u>Pollutant</u>	<u>ppm</u>	<u>g/bhp-hr</u>	NO _x	160	0.7	CO ^x	440	1.6
<u>Pollutant</u>	<u>ppm</u>	<u>g/bhp-hr</u>								
NO _x	160	0.7								
CO ^x	440	1.6								
II.B.2.a.1	<p>Compliance Demonstration To demonstrate compliance with the emission limitations above, the owner/operator shall perform stack testing on the emissions unit according to the stack testing conditions contained in this AO. [R307-165-2, R307-401-8]</p>									
II.B.2.a.2	<p>Initial Test The owner/operator shall conduct an initial stack test on the emission unit within 180 days after startup of the emission unit. [R307-165-2]</p>									
II.B.2.a.3	<p>Test Frequency The owner/operator shall conduct a stack test on the emission unit within five years after the date of the most recent stack test of the emission unit. The Director may require the owner/operator to perform a stack test at any time. [R307-165-2, R307-401-8]</p>									

II.B.2.b	The owner/operator shall initiate an annual service program for the gas system, engine-generator carburetion system, and the computer control system by a factory-trained service technician. At that time, the exhaust emissions shall be checked and the carburetion system shall be rebaselined. A baseline emission report showing compliance for NO _x and CO, using data collected by a Waukesha Emissions Tester, or equivalent, will be used by the factory representative or other factory-trained service technician and recorded. The baseline emissions from the engine-generators shall be determined during the air-to-fuel setup procedure performed by the manufacturer or a manufacturer-trained service technician. The engine-generator baseline emissions shall be rebaselined any time the carburetion system is serviced or any time that a new baseline is set due to annual maintenance or repair. [R307-401-8]
II.B.2.c	The owner/operator shall conduct any stack testing required by this AO according to the following conditions. [R307-401-8]
II.B.2.c.1	Notification At least 30 days prior to conducting a stack test, the owner/operator shall submit a source test protocol to the Director. The source test protocol shall include the items contained in R307-165-3. If directed by the Director, the owner/operator shall attend a pretest conference. [R307-165-3, R307-401-8]
II.B.2.c.2	Testing & Test Conditions The owner/operator shall conduct testing according to the approved source test protocol and according to the test conditions contained in R307-165-4. [R307-165-4, R307-401-8]
II.B.2.c.3	Access The owner/operator shall provide Occupational Safety and Health Administration (OSHA)- or Mine Safety and Health Administration (MSHA)-approved access to the test location. [R307-401-8]
II.B.2.c.4	Reporting No later than 60 days after completing a stack test, the owner/operator shall submit a written report of the results from the stack testing to the Director. The report shall include validated results and supporting information. [R307-165-5, R307-401-8]
II.B.2.c.5	Possible Rejection of Test Results The Director may reject stack testing results if the test did not follow the approved source test protocol or for a reason specified in R307-165-6. [R307-165-6, R307-401-8]
II.B.2.c.6	Test Methods When performing stack testing, the owner/operator shall use the appropriate EPA-approved test methods as acceptable to the Director. Acceptable test methods for pollutants are listed below. [R307-401-8]
II.B.2.d	Standard Conditions A. Temperature - 68 degrees Fahrenheit (293 K) B. Pressure - 29.92 in Hg (101.3 kPa) C. Averaging Time - As specified in the applicable test method. [40 CFR 60 Subpart A, 40 CFR 63 Subpart A, R307-401-8]
II.B.2.d.1	NO_x 40 CFR 60, Appendix A, Method 7; Method 7E; or other EPA-approved testing method as acceptable to the Director. [R307-401-8]

II.B.2.d.2	<p>CO 40 CFR 60, Appendix A, Method 10 or other EPA-approved testing method as acceptable to the Director. [R307-401-8]</p>
II.B.2.d.3	<p>Internal Combustion (IC) Engines Portable testing monitors may be used to test natural gas-fired boilers and IC engines. If portable monitors are to be used, an EPA method test must be performed at least once every five years. This applies to sources that do not have a federal testing requirement listed in an NSPS, NESHAP, MACT or other federal standards. [R307-401-8]</p>
II.B.3	<p>Emergency Generator Engine Requirements</p>
II.B.3.a	<p>The owner/operator shall not operate the 1,934 kW (2,593 hp) emergency engine on site for more than 100 hours per rolling 12-month period during non-emergency situations. There is no time limit on the use of the engine during emergencies. [40 CFR 63 Subpart ZZZZ, R307-401-8]</p>
II.B.3.a.1	<p>To determine compliance with a rolling 12-month total, the owner/operator shall calculate a new 12-month total by the 20th day of each month using data from the previous 12 months. Records documenting the operation of the emergency engine shall be kept in a log and shall include the following:</p> <ul style="list-style-type: none"> A. The date the emergency engine was used B. The duration of operation in hours C. The reason for the emergency engine usage. <p>[40 CFR 63 Subpart ZZZZ, R307-401-8]</p>
II.B.3.b	<p>To determine the duration of operation, the owner/operator shall install a non-resettable hour meter for each emergency engine. [R307-401-8]</p>
II.B.3.c	<p>The owner/operator shall only use diesel fuel (e.g., fuel oil #1, #2, or diesel fuel oil additives) as fuel in each emergency engine. [R307-401-8]</p>
II.B.3.c.1	<p>The owner/operator shall only combust diesel fuel that meets the definition of ultra-low sulfur diesel (ULSD), which has a sulfur content of 15 ppm or less. [R307-401-8]</p>
II.B.3.c.2	<p>To demonstrate compliance with the ULSD fuel requirement, the owner/operator shall maintain records of diesel fuel purchase invoices or obtain certification of sulfur content from the diesel fuel supplier. The diesel fuel purchase invoices shall indicate that the diesel fuel meets the ULSD requirements. [R307-401-8]</p>
II.B.4	<p>Iron Sponge Adsorber Unit Requirements</p>
II.B.4.a	<p>The iron sponge adsorber units shall treat the digester gas prior to being combusted. [R307-401-8]</p>
II.B.4.b	<p>The iron sponge adsorber units shall be installed in series. The digester gas shall be treated with the iron sponge adsorber unit that is designed to reduce the H₂S concentration to 58 ppm and then with the iron sponge adsorber unit that is designed to reduce the H₂S concentration to 25 ppm. [R307-401-8]</p>
II.B.4.c	<p>The H₂S concentration in the gas stream exiting the iron sponge adsorber unit that is designed to reduce the H₂S concentration to 25 ppm will be measured weekly by Draeger tubes or equivalent, as determined by the Director. [R307-401-8]</p>

II.B.4.d	The five-week rolling average H ₂ S concentration in the digester shall be determined within seven days of the H ₂ S measurement. The five-week rolling average shall start the periods for regeneration or replacement of the iron sponge, as described in II.B.4.d.1 and II.B.4.d.2. Compliance shall be determined by following the regeneration and replacement of the iron sponge within the given period. [R307-401-8]
II.B.4.d.1	If the five-week rolling average H ₂ S concentration exceeds 25 ppm, the media in the iron sponge adsorber unit that is designed to reduce the H ₂ S concentration to 25 ppm shall be regenerated within two weeks of the five-week rolling average calculation. After media regeneration, the five-week rolling average will be restarted. [R307-401-8]
II.B.4.d.2	If the rolling five-week average H ₂ S concentration exceeds 25 ppm after regeneration described in II.B.4.d.1, the media shall be replaced within 90 days of the rolling five-week average H ₂ S concentration exceeding 25 ppm. After media replacement, the five-week rolling average will be restarted. [R307-401-8]
II.B.4.e	Records of the measured H ₂ S concentration, five-week rolling average H ₂ S concentration, iron sponge media regeneration, and iron sponge media replacement shall be maintained. [R307-401-8]

PERMIT HISTORY

This Approval Order shall supersede (if a modification) or will be based on the following documents:

Supersedes
Is Derived From
Incorporates
Incorporates

AO DAQE-AN101590008-17 dated November 1, 2017
NOI dated April 18, 2024
Additional information dated April 9, 2025
Additional information dated June 11, 2025

ACRONYMS

The following lists commonly used acronyms and associated translations as they apply to this document:

40 CFR	Title 40 of the Code of Federal Regulations
AO	Approval Order
BACT	Best Available Control Technology
CAA	Clean Air Act
CAAA	Clean Air Act Amendments
CDS	Classification Data System (used by Environmental Protection Agency to classify sources by size/type)
CEM	Continuous emissions monitor
CEMS	Continuous emissions monitoring system
CFR	Code of Federal Regulations
CMS	Continuous monitoring system
CO	Carbon monoxide
CO ₂	Carbon Dioxide
CO _{2e}	Carbon Dioxide Equivalent - Title 40 of the Code of Federal Regulations Part 98, Subpart A, Table A-1
COM	Continuous opacity monitor
DAQ/UDAQ	Division of Air Quality
DAQE	This is a document tracking code for internal Division of Air Quality use
EPA	Environmental Protection Agency
FDCP	Fugitive dust control plan
GHG	Greenhouse Gas(es) - Title 40 of the Code of Federal Regulations 52.21 (b)(49)(i)
GWP	Global Warming Potential - Title 40 of the Code of Federal Regulations Part 86.1818-12(a)
HAP or HAPs	Hazardous air pollutant(s)
ITA	Intent to Approve
LB/YR	Pounds per year
MACT	Maximum Achievable Control Technology
MMBTU	Million British Thermal Units
NAA	Nonattainment Area
NAAQS	National Ambient Air Quality Standards
NESHAP	National Emission Standards for Hazardous Air Pollutants
NOI	Notice of Intent
NO _x	Oxides of nitrogen
NSPS	New Source Performance Standard
NSR	New Source Review
PM ₁₀	Particulate matter less than 10 microns in size
PM _{2.5}	Particulate matter less than 2.5 microns in size
PSD	Prevention of Significant Deterioration
PTE	Potential to Emit
R307	Rules Series 307
R307-401	Rules Series 307 - Section 401
SO ₂	Sulfur dioxide
Title IV	Title IV of the Clean Air Act
Title V	Title V of the Clean Air Act
TPY	Tons per year
UAC	Utah Administrative Code
VOC	Volatile organic compounds